Rate of Excretion of Radioactive Calcium Ca^4 into the Bile and in Urine

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Table 1.

Animals	(a)		(b)		(c)		(d)	
Time after admin.	3	5	3	5	3	5	3	5
Acid soluble fr.	3.70%	2.81	4.23	4.57	4.32	2.41	2.91	3.02
Lipid fraction	0.77**	0.92	1.22	1.45	0.72	0.88	0.36	1.13
Residual fraction	0.91	1.21	0.91	0.45	1.67	0.43	1.06	0.73

** percent of the administration

The radiophosphate content of the lipid and the acid soluble fraction of the damaged liver amounted to higher value than that of the control liver.

The radiophosphorus with the activity of 25 μc per kilo body weight was injected into rabbit. The animal was sacrificed five hours thereafter, and the distribution of P^{32} in adenosine-triphosphoric acid of muscle tissues of this animal was examined. It was found that the bulk of the radiophosphorus was contained in the endstanding acid soluble phosphate groups, and that the acid stable adenylic acid-P fraction comprised only a very small quantity of the isotopes.

* The radioisotopes used were those distributed from the A. E. C. of U. S. A.

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21. Rate of Excretion of Radioactive Calcium Ca^{45}* into the Bile and in Urine

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The radioactive calium in the form of $CaCl_2$ solution (pH 5.5) was injected intravenously to the rabbits with the experimental bile fistula, and thereafter the excretion of Ca^{45} for four hours into the bile and in urine was examined. The dose for each animal had the activity of 30 μc, and contained 4 mg calcium as the carrier. Calcium determination was done by a modified Kramer-Tisdall method, and the activity of Ca^{45} was measured by G-M counter.

The bile was collected and examined every one hour. The biliary excretion as well as the specific activity of the biliary Ca^{45} was the highest at the first one hour and then decreased gradually. The intravenous injection of 200 mg inactive $CaCl_2$ at one hour after the Ca^{45} administration caused some variation of the course of the biliary calcium excretion, but the successive decrease of the specific activity of the biliary Ca^{45} proceeded thereby in the same manner as that in control animal (Table 1).

Table 1. Ca^{45} excretion into the bile of rabbits.

Animals**	(1)		(2)		(3)	
Time (min.)	Counts (per min.)	Sp. ac. % ***	Counts	Sp. ac. %	Counts	Sp. ac. %
0-60	3390	3342	6489	6980	4314	5380
61-120	2395	3304	4197	6120	2844	4920
121-180	1615	2602	2923	5130	2248	3228
181-240	717	1638	2276	4160	3022	3105
Total		0.083		0.179		0.140

** (1), (2) control (3) 200 mg $CaCl_2$ injected one hour after the Ca^{45} adm.

*** per cent of the administration

Table 2. Urinary excretion of Ca^{45} for 4 hours after the administration.

Animals ****	counts (per min.)	sp. ac.	% ****
(1)	584	1052	0.0062
(2)	175	1202	0.0019
(3)	3000	421	0.0339

**** The same as in Table 1.

The specific activity of Ca^{45} in the bile at the fourth hour amounted to the same value as that in serum at that time. The urinary excretion of Ca^{45} for 4 hours showed individual disparity, but the specific activity of the urinary isotopes was uniform in control animals. The intravenous injection of 200 mg inactive $CaCl_2$ caused the notable increase of the urinary calcium and the decrease of the specific activity of the urinary Ca^{45}. (Table 2).

* The radioisotopes were distributed by the A. E. C. of U. S. A.

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22. On the Radioactive Sulphur S^{35}* Uptake by the Liver and Other Tissues

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The radioative sulphur S^{35} [BaS in $Ba(OH)_2$] solution was injected subcutaneously into male mice in various condition, and the S^{35} uptake by liver, kidney and muscle tissues of these animals was examined. The administered S^{35} solution was that of pH 5.6, and the activity of the dose for each animal was 2.8-4.0 μc. The experimental liver damage was done by the subcutaneous injection of CCl_4 at 24 hours before the S^{35} administration. The methionine treatment was performed by the simultaneous administration of 40 mg l-methionine with the S^{35} solution. The animals were sacrified at each period of one, two and three hours after the S^{35} adminis4tration, and the total S^{35} cotent of the tissues was measured by the G-M counter. The carriers of the uniform weight were used, in order to avoid the possible errors due to the self absor-